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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/821,526

03/29/2001

James Patrick Quaile

RD-28,219

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10/10/2003

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER

NGUYEN, ANH T

ART UNIT

PAPER NUMBER

2121

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/821,526

Applicant(s)

QUAILE, JAMES PATRICK

Examiner

Anh T Nguyen

Art Unit

2121

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Mar. 29, 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to application **09/821,526**, filed March 29, 2001.

This action is non-final.

2. The present title of the invention is "Evidential Reasoning System and Method" as originally filed.

Information Disclosure Statement

3. Applicant is respectfully reminded of the ongoing duty to fully disclose all pertinent information and material pertaining to the patentability of applicant's claimed invention under 37 CFR 1.56.

4. The Information Disclosure Statement received March 29, 2001 has been considered. Please see attached PTO-1449.

Drawings

5. Figure 1 and Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Appropriate correction is required.

Specification

6. The disclosure is objected to because of the following informalities: The paragraph beginning with, "Evidential reasoning is an artificial intelligence methodology..." is repeated. (See page 1, under heading Background of the Invention). Appropriate correction is required.
7. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is required to correcting any errors of which applicant may become aware in the specification. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 1-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tom

(USPN 5,832,465) in view of "GENIUS™ Automated Underwriting System:Combining Knowledge Engineering and Machine Learning to Achieve Balanced Risk Assessment" Golibersuch et al., Proceedings of the 7th Innovative Applications of Artificial Intelligence Conference, Aug.21-23, 1994, Montreal, Quebec, pp.49-61., hereinafter Golibersuch .

Tom teaches the system and method as claimed. However, Tom does not particularly teach the system and method wherein some of said evidential values comprise unknown information. Golibersuch teaches the system and method wherein some of said evidential values comprise unknown information.

By including inadequacies such as missing or unknown attributes or evidential values, the system and method as claimed would identify potential problems and anticipate default values for a consistent and optimized knowledge base. Thus, faithfully emulating the experts' behavior that an expert would take if certain facts were unknown.

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the system and method as taught by Tom and to incorporate the missing or unknown attributes or evidential values as taught by Golibersuch to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

Regarding claim 1

Tom teaches,

- providing a model structure including a plurality of processing nodes, each of said processing nodes coupled to receive a set of inputs to supply a respective output [Fig.1;(col.11, lines 35-40, “model structure...set of inputs and output”)];
- evaluating a respective attribute assigned to each of the plurality of processing nodes [Fig.1;(col.11, lines 45-48, “number of attributes...plurality of processing nodes”)];
- specifying a number of possible linguistic evidential values for each of said attributes [Fig.1;(col.11, lines 48-49 and col.4 lines 34-37, “evidential data...not limited to...may have other attribute”)],
- and combining the outputs from said processing nodes to reach a decision even in the presence of said unknown information, said combining configured to emulate expert data [Fig.1;(col.3, lines 44-46, “linguistic evidence values are combine”)].

However, Tom does not particularly teach the system and method wherein some of said evidential values comprise unknown information. It is noted however that Tom does not exclude the possibility of unknown information (col.4, lines 34-37, “evidential data...not limited to...may have other attribute”).

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Golibersuch teaches,

- the system and method wherein some of said evidential values comprise unknown information (page 56,col.1, “include inadequacies...missing or unnecessary attributes or values”)

Regarding claim 2

Tom teaches,

- a hierarchical model structure [Fig.1;(col.11, lines 35-40, “defining hierarchical model structure”)].

Regarding claim 3

Tom teaches,

- outputs from lower processing nodes are successively passed as inputs to higher level processing nodes until a final output is generated from the highest level processing node in the hierarchical model structure, said final output comprising said decision (col.2, lines 4-8, “outputs from lower processing nodes...final output is generated”).

Regarding claim 4

Tom teaches,

- expert data is collected during a learning stage from a plurality of examples for each of the processing nodes, each of the plurality of examples having a set of inputs [Fig.1;(col.4, lines 55-58, “examples of evidential data...supplied by experts”)],

Golibersuch teaches,

- the system and method some indicative of unknown information, and a corresponding output indicative of an expert opinion some of said evidential values comprise unknown

information (page 56, col.1 “include inadequacies...missing or unnecessary attributes or values”).

Regarding claim 5

Tom teaches,

- plurality of examples is used during said learning stage to configure the processing nodes in the model structure to generate a final output from a given set of inputs[Fig.1;(col.3, lines 39-43, “transferred into a learning”)], the model structure being configured so that said final output and the expert opinion from the plurality of examples are statistically equivalent to one another[Fig.1;(col.2, lines 19-21, “model structure...minimal error between”)].

Regarding claim 6

Golibersuch teaches,

- identifying expert opinion that deviates from a majority of the plurality of examples [page 56,col.1, “differences between these opinions”]

Regarding claim 7

Golibersuch teaches,

- adjusting said identified expert opinion to correct any deviations therein. [page 56, col.1, “reviewed results and suggested changes and improvements”]

Regarding claim 8

Golibersuch teaches,

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- reconfiguring the processing nodes to include any adjusted expert opinion. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

Regarding claim 9

Golibersuch teaches,

- disregarding said identified expert opinion to remove any deviations therein. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

Regarding claim 10

Golibersuch teaches,

- reconfiguring the processing nodes omitting any disregarded expert opinion. [page 56, col.1, paragraph 1 “As such problems...iterated until a consistent knowledge base was obtained”]

Regarding claim 11

Golibersuch teaches,

- making the model structure available over a global communications network during a production stage for processing financial service applications. (page 57,col.1, lines 1-3, ”distributed client-server environment”)

Regarding claim 12

Tom teaches,

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- A computerized method for making decisions based on evidential reasoning, said decisions used for risk and credit analysis of financial service applications [Fig.1; (col.2, lines 32-53, “performing risk...evidential numeric value”)].

Regarding claim 13

Tom teaches,

- plurality of examples comprises a plurality of hypothetical examples[Fig.1;(col.3, lines 33-38, “number of possible evidential values for the attributes ...various examples”)].

Regarding claim 14

Golibersuch teaches,

- plurality of examples comprises historical data from previously processed applications.

[page 56, col.1, “actual historical applications”]

Regarding claim 15

- Rejection of claim 12 is incorporated and further contains limitation recites in claim 12; therefore claim 15 is rejected under same rationale as claim 12.

Regarding claim 16

Tom teaches,

- model structure is configured to provide a plurality of non-overlapping intervals over its possible output space, said model structure being further configured to optimize separation between any adjacent intervals of said possible output space so that said final output unambiguously maps into a single interval of said output space. [col.4, lines 38-42, “aggregate...mapped to”)]

Regarding claim 17

- Rejection of claims 1 and 12 is incorporated and further claim contain limitation recites in claims 1 and 12, therefore claim 17 is rejected under same rationale as claims 1 and 12.

Regarding claim 18

- Rejection of claim 17 is incorporated and further claim contain limitation recites in claim 17, therefore claim 18 is rejected under same rationale as claim 17.

Regarding claim 19

- Rejection of claim 18 is incorporated and further claim contain limitation recites in claim 18, therefore claim 19 is rejected under same rationale as claim 18.

Regarding claim 20

- Rejection of claims 1, 12 and 17 is incorporated and further claims contain limitation recites in claims 1, 12 and 17 , therefore claim 20 is rejected under same rationale as claims 1, 12 and 17.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Form PTO-892.

Correspondence Information


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Nguyen whose telephone number is 703-305-8649. The examiner can normally be reached on Monday-Friday from 7:00 A.M. - 4:30 P.M..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703) 305-0282. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6606 for Regular Communications and 703-308-9051 for After Final Communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

AN


September 26, 2003


ANIL KHATRI
SUPERVISORY PATENT EXAMINER